Complete Summary

GUIDELINE TITLE

Evidence based clinical practice guideline for medical management of otitis media with effusion in children 2 months to 13 years of age.

BIBLIOGRAPHIC SOURCE(S)

Cincinnati Children's Hospital Medical Center. Evidence based clinical practice guideline for medical management of otitis media with effusion in children 2 months to 13 years of age. Cincinnati (OH): Cincinnati Children's Hospital Medical Center; 2004 Oct. 11 p. [67 references]

GUIDELINE STATUS

This is the current release of the guideline.

This guideline updates a previous version: Cincinnati Children's Hospital Medical Center. Evidence-based clinical practice guideline for medical management of otitis media in children 2 months to 6 years of age. Cincinnati (OH): Children's Hospital Medical Center (CHMC); 1999. 8 p.

COMPLETE SUMMARY CONTENT

SCOPE

DISEASE/CONDITION(S)

Otitis media with effusion (OME)

GUIDELINE CATEGORY

Counseling
Diagnosis

Evaluation
Management

CLINICAL SPECIALTY

Family Practice
Otolaryngology
Pediatrics

INTENDED USERS

Advanced Practice Nurses
Allied Health Personnel
Health Care Providers
Nurses
Patients
Physician Assistants
Physicians
Speech-Language Pathologists

GUIDELINE OBJECTIVE(S)

- To improve the identification of the at risk child
- To improve the use of appropriate referral criteria
- To improve parental involvement in decision-making around the management of otitis media with effusion (OME)

TARGET POPULATION

Children age 2 months up to 13 years of age who present with signs and symptoms of otitis media with effusion (OME)

Note: Children with functioning pressure equalization (PE) tubes in place are excluded.

INTERVENTIONS AND PRACTICES CONSIDERED

Assessment and Diagnosis

1. History and physical examination
2. Pneumatic otoscopy and tympanometry
3. Acoustic reflectometry

Management/Treatment

1. Observation without antibiotics
2. Analgesia
3. Antibiotic therapy (not recommended for the otherwise healthy child)
4. Aggressive individualized management for children at risk for developmental difficulties, including early referrals for audiologic evaluation, frequent follow-

up, antibiotic management, speech/language assessment, pressure equalization (PE) tubes, and/or other otolaryngological evaluation
5. Systemic steroids, antihistamines, decongestants, and complementary or alternative treatments (considered, but not recommended)
6. Follow-up evaluation

Consults and Referrals

1. Referral for audiologic evaluation
2. Referral for otolaryngological evaluation
3. Referral for speech and language evaluation
4. Referral for evaluation for pressure equalization tube insertion

Education

1. Counseling family regarding the expected length of time the child may continue to have OME as well as the importance of follow-up for unresolved OME
2. Educating family about preventable risk factors
3. Educating family of the child at risk for speech or language delay regarding preventive strategies

MAJOR OUTCOMES CONSIDERED

- Duration of signs and symptoms of otitis media with effusion
- Risk of disease recurrence
- Hearing loss

METHODOLOGY

METHODS USED TO COLLECT/SELECT EVIDENCE

Searches of Electronic Databases

DESCRIPTION OF METHODS USED TO COLLECT/SELECT THE EVIDENCE

To select evidence for critical appraisal by the group, the citations in the American Academy of Pediatrics (AAP) Clinical Practice Guideline for Otitis Media with Effusion (OME) were reviewed. Additionally, the Medline, EmBase, and the Cochrane databases were searched for dates of January 2003 through June 2004 to generate an unrefined "combined evidence" database using a search strategy focused on answering clinical questions relevant to otitis media and employing a combination of Boolean searching on human-indexed thesaurus terms (Medical Subject Headings [MeSH] headings using an OVID Medline interface) and natural language searching on words in the title, abstract, and indexing terms. The citations were reduced by eliminating duplicates, review articles, non-English articles, and adult articles. The resulting abstracts were reviewed by a methodologist to eliminate low quality and irrelevant citations. During the course of the guideline development, additional clinical questions were generated and subjected to the search process.

NUMBER OF SOURCE DOCUMENTS

162

METHODS USED TO ASSESS THE QUALITY AND STRENGTH OF THE EVIDENCE

Subjective Review

RATING SCHEME FOR THE STRENGTH OF THE EVIDENCE

Not applicable

METHODS USED TO ANALYZE THE EVIDENCE

Review
Review of Published Meta-Analyses

DESCRIPTION OF THE METHODS USED TO ANALYZE THE EVIDENCE

Not stated

METHODS USED TO FORMULATE THE RECOMMENDATIONS

Expert Consensus

DESCRIPTION OF METHODS USED TO FORMULATE THE RECOMMENDATIONS

The recommendations contained in this guideline were formulated by an interdisciplinary working group which performed systematic and critical literature reviews, using the grading scale below under "Type of Evidence Supporting the Recommendations," and examined current local clinical practices.

During formulation of these guidelines, the team members have remained cognizant of controversies and disagreements over the management of these patients. They have tried to resolve controversial issues by consensus where possible and, when not possible, to offer optional approaches to care in the form of information that includes best supporting evidence of efficacy for alternative choices.

RATING SCHEME FOR THE STRENGTH OF THE RECOMMENDATIONS

Not applicable

COST ANALYSIS

A formal cost analysis was not performed and published cost analyses were not reviewed.

METHOD OF GUIDELINE VALIDATION

Comparison with Guidelines from Other Groups
Internal Peer Review

DESCRIPTION OF METHOD OF GUIDELINE VALIDATION

The guidelines have been reviewed and approved by clinical experts not involved in the development process, senior management, Risk Management & Corporate Compliance, the Institutional Review Board, other appropriate hospital committees, and other individuals as appropriate to their intended purposes.

RECOMMENDATIONS

MAJOR RECOMMENDATIONS

Each recommendation is followed by evidence grades (A-X) identifying the type of supporting evidence. Definitions for the types of evidence are presented at the end of the "Major Recommendations" field.

Assessment and Diagnosis

General

Signs and symptoms of otitis media with effusion (OME) are often only identified upon follow-up to acute otitis media (AOM) or at an unrelated office visit.

History and Physical Examination

1. It is recommended that a focused history and physical of the child with OME includes assessment and documentation of:
    - Intermittent ear pain, fullness, or popping
    - Hearing/speech concerns (Roberts, Rosenfeld, & Zeisel, 2004 [M])
    - Balance (Golz, Angel-Yaeger, & Parush, 1998 [C]; Casselbrant et al.,1995 [C])
    - Bilaterality
    - Duration of effusion
    - Recurrent AOM
    - Presence of any craniofacial anomalies (American Academy of Family Physicians [AAFP], American Academy of Otolaryngology-Head and Neck Surgery [AAO-HNS], American Academy of Pediatrics [AAP] Subcommittee on Otitis Media with Effusion, 2004 [S])
2. It is recommended that OME be diagnosed by the presence of middle ear effusion (MEE), as assessed by pneumatic otoscopy, without signs and symptoms of acute inflammation (AAFP, AAO-HNS, AAP Subcommittee on Otitis Media with Effusion, 2004 [S]).

    Note: Adequate illumination for OME diagnosis requires appropriate maintenance of pneumatic otoscopes in the office, including changing the light bulb and battery (Barriga, Schwartz, & Hayden, 1986 [O]).

3. It is recommended that tympanometry may be used to enhance accuracy when diagnosing OME (Karma et al., 1989 [D]; Shekelle et al., 2003 [S]; Brookhouser, 1998 [S]; Jones and Kaleida, 2003 [O]; Pichichero, 2002 [O]; Pichichero & Poole, 2001 [O]).

   Note 1: Pneumatic otoscopy and tympanometry measure the degree of mobility of tympanic membrane as an indication of the presence of MEE (Palmu et al., 1999 [C]; van Balen, Aarts, & De Melker, 1999 [C]; Jerger, 1970 [C]; Jones and Kaleida, 2003 [O]; Pichichero, 2002 [O]; Barriga, Schwartz, & Hayden, 1986 [O]).

   Note 2: Acoustic reflectometry is not often used nor readily available in the Cincinnati area, though the procedure is acceptable for determining the presence of MEE (Block et al., 1999 [C]; Barnett et al., 1998 [C]; Block et al., 1998 [C]; Kimball, 1998 [S]).

4. It is recommended that the child with OME who is at risk for developmental difficulties be identified early. These children include those with sensory, physical, cognitive, or behavioral factors listed in the table below (AAFP, AAO-HNS, AAP Subcommittee on Otitis Media with Effusion, 2004 [S]).

   Note: Children with Down syndrome (Shott, Joseph, & Heithaus, 2001 [C]; Whiteman, Simpson, & Compton, 1986 [C]), cranial facial dysostosis (Corey, Caldarelli, & Gould, 1987 [C]), cleft palate (Paradise & Bluestone, 1974 [C]) and autism (Rosenhall et al., 1999 [C]) have been shown to be at higher risk for OME and/or its associated outcomes of developmental delay in hearing, speech or language.

   Table: Risk Factors for Developmental Difficulties (AAFP, AAO-HNS, AAP Subcommittee on Otitis Media with Effusion, 2004 [S])

• Permanent hearing loss independent of OME
• Suspected or diagnosed speech and language delay or disorder
• Autism-spectrum disorder and other pervasive developmental disorders
• Syndromes (e.g., Down) or craniofacial disorders that include cognitive, speech, and language delays
• Blindness or uncorrectable visual impairment

• Cleft palate with or without associated syndrome
• Developmental delay

Management

The foundation of OME management is follow-up and monitoring of the presence or resolution of effusion. This monitoring is clinically important for the early identification of the child at risk for developmental difficulties and for the appropriate timing for referral of the child with persistent OME.

1. It is recommended that observation without antibiotics be the first line management option for at least 3 months for the child with OME (AAFP, AAO-HNS, AAP Subcommittee on Otitis Media with Effusion, 2004 [S]).

   Note: Data on spontaneous resolution rates in the literature are extremely variable, but generally range from 20 to 80% by 3 months. Inclusion criteria, resolution criteria, duration of diagnosis, month of diagnosis, and transient improvement followed by relapse contribute to the reported variability (Rosenfeld & Kay, 2003 [M]).

2. It is recommended that all children with OME who have a positive assessment for pain be treated with an appropriate analgesic, though ear pain in OME is not common (AAP Subcommittee on Management of Acute Otitis Media, 2004 [S]; The assessment and management of acute pain, 2001 [S]).
3. It is recommended, for the otherwise healthy child with persistent OME, that no medication be given (Williamson, 2002 [S]).

   Note 1: Meta-analyses reviewing the benefit of antibiotics for persistent OME have been equivocal. One review published prior to current concern for judicious use of antibiotics found short-term benefit (Rosenfeld & Post, 1992 [M]). A more recent review raised questions about selection bias and concluded studies do not support the use of antibiotics for OME (Cantekin & McGuire, 1998 [M]).

   Note 2: A small randomized controlled trial demonstrated more rapid improvement in a nasal beclomethasone intervention group as compared to controls over a 12 week treatment period. Both groups were treated with antibiotics (Tracy et al., 1998 [B]).

   Note 3: Two weeks of systemic steroid therapy demonstrated better resolution of effusion at the end of therapy as compared to a control group ($p = 0.03$). However, two weeks after finishing treatment there was no difference between groups ($p = 0.12$) (Mandel et al., 2002 [A]).

4. It is recommended that the child with OME who is at risk for developmental difficulties (see table above entitled "Risk Factors for Developmental Difficulties") be aggressively managed as appropriate to his/her condition. This individualized management may include:
    - Earlier referral for audiologic evaluation (Friel-Patti & Finitzo, 1990 [C]; Carney & Moeller, 1998 [S])
    - Shorter intervals between visits
    - Antibiotic therapy
    - Referral for speech/language assessment
    - Referral for pressure equalization (PE) tubes, and/or
    - Referral for other otolaryngological evaluation

    Note 1: A 5-year study of 48 children with Down syndrome found that the previously reported incidence of 38 to 78% hearing loss in children with Down syndrome can be reduced to 3% with aggressive management of otitis media (Shott, Joseph, & Heithaus, 2001 [C]).

    Note 2: Preventive strategies may be helpful to children with special populations, from poor socioeconomic environments, or with development delays who are at risk for language and learning delay and who are experiencing hearing loss due to OME (Roberts et al., 2003 [M], 1998 [C], 1995 [C]; Roberts, Burchinel, & Zeisel, 2002 [C]). See table below:

Table: Strategies for Optimizing the Listening-Learning Environment for Children with OME and Hearing Loss (Roberts, Rosenfeld, & Zeisel, 2004 [M]; (AAFP, AAO-HNS, AAP Subcommittee on Otitis Media with Effusion, 2004 [S])

• Get within 3 feet of the child before speaking
• Turn off competing audio signals such as unnecessary music and television in the background
• Face the child and speak clearly, using visual clues (hands, pictures) in addition to speech
• Slow the rate, raise the level, and enunciate speech directed at the child
• Read to or with the child, explaining pictures and asking questions

• Repeat words, phrases, and questions when misunderstood
• Assign preferential seating in the classroom near the teacher
• Use a frequency-modulated (FM) personal- or sound-field amplification system in the classroom

5. It is recommended that the otherwise healthy child with OME be evaluated at 1 to 2 months after diagnosis and then again at 3 months after diagnosis, or until either spontaneous, medical, or surgical resolution of the effusion is achieved or until basis for a referral is identified (See Consults and Referrals section below) (Paradise et al., Otitis media, 2003 [A], Early versus delayed insertion, 2003 [A], 2001 [A]; AAFP, AAO-HNS, AAP Subcommittee on Otitis Media with Effusion, 2004 [S]; Paradise, 2002 [X]).
6. It is not recommended that other therapies be used in the treatment of OME.

   Systemic steroids, antihistamines, decongestants, and complementary or alternative treatments have not been documented to be efficacious in the treatment of OME, and some herbal preparations may have harmful side effects (Ernst, 2003 [M]; Mandel et al., 1987 [A]; Harrison, Fixsen, & Vickers, 1999 [B]; Fallon, 1997 [C]; Williamson, 2002 [S]; Miller et al., 2000 [S]).

   > Note: It is recognized that use of complementary and alternative medicine (CAM) is common and its use is often not reported to the primary care physician (Eisenberg et al., 1998 [O]; Spigelblatt et al., 1994 [O]). The physician may take the OME visit as an opportunity to begin a respectful discussion regarding the safety and efficacy of complementary and alternative medicine with families who report its use.

Consults and Referrals

Evaluation for placement of pressure-equalizing (PE) tubes is the most common reason children with OME are referred to an otolaryngologist. The discussion of alternatives, risks, benefits, and expected outcomes associated with tube placement begins with the primary care clinician and is continued with the otolaryngologist if the patient is referred.

Reestablishing ventilation to the middle ear by tube placement may be helpful for the following reasons:

- To decrease the frequency of recurrent AOM for families burdened by repeated infections or in cases affected by antibiotic resistance
- To maximize hearing potential for children at risk for poor school performance, behavior problems, or speech/language delay
- To prevent chronic changes to the tympanic membrane (TM) or to the middle ear space
- To prevent or treat acute complications of AOM

Delaying insertion of tube placement will allow many cases to resolve spontaneously and may be elected for the following reasons:

- To delay or avoid surgery and anesthesia
- To decrease risk of TM abnormalities caused by surgery
- To reduce unnecessary use of resources

1. It is recommended that a child be referred for audiologic evaluation (see table below entitled "Hearing Loss Definitions and Expected Auditory Behaviors in Children with OME"):
    - If OME persists for at least 3 months
    - If concerns are noted for hearing, speech, or language, by parents, teachers, or healthcare providers, or
    - 3 months after a prior audiologic evaluation in a child being observed with OME

    (Johnston et al., 2004 [A]; Brody et al., 1999 [C]; Rosenfeld, Goldsmith, & Madell, 1998 [C]; AAFP, AAO-HNS, AAP Subcommittee on Otitis Media with Effusion, 2004 [S]; Local Expert Consensus [E])

    Table: Hearing Loss Definitions and Expected Auditory Behaviors in Children with OME

Level of Hearing Loss/Hearing Levels (decibels [dB])
Moderate/$\geq$40 • Communication, learning, and socialization significantly affected • Understands conversational speech only within a distance of 3 to 5 feet (face-to-face)
Mild/26 to 39 • Has difficulty with selective hearing and background noise • Has significant difficulty with faint or distant speakers • May mimic attention problems

Normal to Slight/≤25 • May exhibit fatigue due to listening effort • May have difficulty with faint or distant speakers

Adapted from (Martin & Clark, 1996 [S]; Anderson & Matkin, 1991 [S])

2. It is recommended that an introduction and a discussion be initiated by the primary care clinician with the parents of children with documented OME of the procedure, alternatives, risks, benefits, and expected outcomes of PE tube insertion being considered for otolaryngological referral (Local Expert Consensus [E]).

   Note: It has been shown that insertion of tympanostomy tubes will reduce the total amount of time with effusions that a child will experience, but has not been shown to affect important speech/language development, behavior, or cognitive outcomes up to 4 years of age. Furthermore, prompt insertion of PE tubes (compared to delaying insertion 6 to 9 months) in otherwise healthy children with persistent (>3 months) OME in the first 3 years of life results in increased TM abnormalities compared to children selectively managed; however, this finding is of questionable clinical significance (Johnston et al., 2004 [A]; Paradise et al., 2001 [A]).

3. It is recommended that a child with MEE of at least 3 months duration be referred for evaluation for PE tube insertion for:
   - Recurrent AOM (history of 6 episodes over a 12 month period taking into account the severity of episodes, clustering of episodes, and persistence of OME)
   - Moderate hearing loss (see table above titled Hearing Loss Definitions and Expected Auditory Behaviors in Children with OME)
   - Anatomic changes developing secondary to OME or AOM
   - Clinical symptoms of severe retraction pockets in the tympanic membrane; otalgia; tinnitus; or if neurologic problems related to balance are evident
   - Complications from AOM or chronic OME (such as mastoiditis, facial nerve paralysis, disturbance in balance, or meningitis) (Paradise et al., 2001 [A]; Engel-Yeger, Golz, & Parush, 2004 [C]; Paradise, 2002 [X]).

4. It is recommended that a child with MEE for at least 3 months duration with mild hearing loss (see table above entitled "Hearing Loss Definitions and Expected Auditory Behaviors in Children with OME") be considered for evaluation for PE tube insertion based upon risk factors (Teele, Klein, & Rosner, 1989 [C]) which may include:
   - Developmental disorders (Shott, Joseph, & Heithaus, 2001 [C])
   - Previous PE tubes

- Sibling history of ear infection
- Male gender
- Fall and winter season (Gordon, Grunstein, & Burton, 2004 [C])

Note 1: Regardless of the laterality, continuity of OME, or degree of hearing loss (pure tone average loss of up to 40 decibels), delay of tube insertion for 6 to 9 months in children <3 years of age in one large randomized controlled trial did not result in significant differences, up to age 4, on any measure of speech, language production, cognition, child behavior, or parental stress (Paradise et al., Otitis media, 2003 [A], Early versus delayed insertion, 2003 [A], 2001 [A]).

Note 2: The decision to refer earlier or later for evaluation for PE tube insertion rests on the advantages of avoiding surgery due to resolution of OME during the period of delay versus the added advantage the surgery provides by being performed sooner rather than later in the cases which do not resolve. The value placed on these uncertain variables by clinicians, combined with the patient biology and family preferences may result in different decisions for different patient:clinician dyads.

Note 3: In a large randomized controlled trial, in the group randomized to delay tube insertion for 6 to 9 months, 66% did not receive tubes by age 3 (Paradise et al., 2001 [A]). Secondary analysis of observational studies have shown the spontaneous rate of clinical resolution of OME to be 31% at 12 months (95% confidence interval [CI]: 0.19, 0.43) (Rosenfeld & Kay, 2003 [M]).

5. It is recommended that a child with signs of speech delay be referred for a speech and language evaluation (AAFP, AAO-HNS, AAP Subcommittee on Otitis Media with Effusion, 2004 [S]).
6. It is recommended that appropriate and complete documentation, including what is expected from the specialist, accompany referrals to otolaryngologist, audiologist, or speech pathologist (Kuyvenhoven & De Melker, 1990 [D]; AAP Subcommittee on Management of Acute Otitis Media, 2004 [S]).

Education

1. It is recommended that the family be counseled regarding the expected length of time the child may continue to have OME as well as the importance of follow-up for unresolved OME.
2. It is recommended that the family be educated about preventable risk factors. These include:
    - Parental smoking or other sources of second-hand smoke (Uhari, Mantysaari, & Niemela, 1996 [M]; Ilicali et al., 1999 [C])
    - Exposure to others (especially family members) with upper respiratory infections (Uhari, Mantysaari, & Niemela, 1996 [M])

- Excessive pacifier use, limiting use to when the child is falling asleep (Uhari, Mantysaari, & Niemela, 1996 [M]; Niemela et al., 2000 [A])

3. It is recommended that the family of the child at risk for speech or language delay be educated regarding preventive strategies. See table above entitled "Strategies for Optimizing the Listening-Learning Environment for Children with OME and Hearing Loss."

Definitions:

Evidence Based Grading Scale:

A: Randomized controlled trial: large sample
B: Randomized controlled trial: small sample
C: Prospective trial or large case series
D: Retrospective analysis
E: Expert opinion or consensus
F: Basic laboratory research
S: Review article
M: Meta-analysis
Q: Decision analysis
L: Legal requirement
O: Other evidence
X: No evidence

CLINICAL ALGORITHM(S)

An algorithm is provided in the original guideline document for the evaluation and management of otitis media with effusion (OME) in children 2 months to 13 years of age.

EVIDENCE SUPPORTING THE RECOMMENDATIONS

REFERENCES SUPPORTING THE RECOMMENDATIONS

References open in a new window

TYPE OF EVIDENCE SUPPORTING THE RECOMMENDATIONS

The type of evidence is identified and classified for each recommendation (see "Major Recommendations").

Evidence Based Grading Scale:

A: Randomized controlled trial: large sample
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M: Meta-analysis
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L: Legal requirement
O: Other evidence
X: No evidence

BENEFITS/HARMS OF IMPLEMENTING THE GUIDELINE RECOMMENDATIONS

POTENTIAL BENEFITS

- Effective medical management of otitis media with effusion (OME) in children 2 months to 13 years of age.
- Improved identification of the at-risk child
- Improved use of appropriate referral criteria
- Improved parental involvement in decision-making around the management of otitis media with effusion

POTENTIAL HARMS

Not stated

QUALIFYING STATEMENTS

QUALIFYING STATEMENTS

These recommendations result from review of literature and practices current at the time of their formulations. This protocol does not preclude using care modalities proven efficacious in studies published subsequent to the current revision of this document. The guideline document is not intended to impose standards of care preventing selective variances from the guidelines to meet the specific and unique requirements of individual patients. Adherence to this pathway is voluntary. The physician in light of the individual circumstances presented by the patient must make the ultimate judgment regarding the priority of any specific procedure.

IMPLEMENTATION OF THE GUIDELINE

DESCRIPTION OF IMPLEMENTATION STRATEGY

Appropriate companion documents have been developed to assist in the effective dissemination and implementation of the guideline.

IMPLEMENTATION TOOLS

Clinical Algorithm
Patient Resources
Quick Reference Guides/Physician Guides

For information about availability, see the "Availability of Companion Documents" and "Patient Resources" fields below.

INSTITUTE OF MEDICINE (IOM) NATIONAL HEALTHCARE QUALITY REPORT CATEGORIES

IOM CARE NEED

Getting Better

IOM DOMAIN

Effectiveness
Patient-centeredness

IDENTIFYING INFORMATION AND AVAILABILITY

BIBLIOGRAPHIC SOURCE(S)

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ADAPTATION

Not applicable: The guideline was not adapted from another source.

DATE RELEASED

1999 (revised 2004 Oct)

GUIDELINE DEVELOPER(S)

Cincinnati Children's Hospital Medical Center - Hospital/Medical Center

SOURCE(S) OF FUNDING

Cincinnati Children's Hospital Medical Center

GUIDELINE COMMITTEE

Otitis Media with Effusion Team Members 2004

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FINANCIAL DISCLOSURES/CONFLICTS OF INTEREST

The guideline was developed without external funding. All Team Members and Clinical Effectiveness support staff listed have signed a conflict of interest declaration.

GUIDELINE STATUS

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GUIDELINE AVAILABILITY

Electronic copies: Available from the Cincinnati Children's Hospital Medical Center Web Site.

For information regarding the full-text guideline, print copies, or evidence-based practice support services contact the Children's Hospital Medical Center Health Policy and Clinical Effectiveness Department at HPCEInfo@chmcc.org.

AVAILABILITY OF COMPANION DOCUMENTS

The following is available:

- Guideline highlights. Otitis media with effusion age 2 months to 13 years. Cincinnati Children's Hospital Medical Center, 2004.

Electronic copies: Available from the Cincinnati Children's Hospital Medical Center Web site.

PATIENT RESOURCES

The following are available:

- Types of hearing tests. Cincinnati Children's Hospital Medical Center, 2004. Electronic copies available from the Cincinnati Children's Hospital Medical Center Web site.
- Strategies for children with persistent middle ear effusion. Cincinnati Children's Hospital Medical Center, 2004. Electronic copies available from the Cincinnati Children's Hospital Medical Center Web site.

Please note: This patient information is intended to provide health professionals with information to share with their patients to help them better understand their health and their diagnosed disorders. By providing access to this patient information, it is not the intention of NGC to provide specific medical advice for particular patients. Rather we urge patients and their representatives to review this material and then to consult with a licensed health professional for evaluation of treatment options suitable for them as well as for diagnosis and answers to their personal medical questions. This patient information has been derived and prepared from a guideline for health care professionals included on NGC by the authors or publishers of that original guideline. The patient information is not reviewed by NGC to establish whether or not it accurately reflects the original guideline's content.

NGC STATUS

This summary was completed by ECRI on September 20, 1999. The information was verified by the guideline developer as of November 15, 1999. This NGC summary was updated by ECRI on December 7, 2004. The information was verified by the guideline developer on January 12, 2005.

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Date Modified: 2/14/2005